



## MAKING FIRE – TRUE FLINT & STEEL

BY JEFF RANDALL

There's a major difference between artificial flint (Ferrocerium/Metal Match) and true flint (a generic term used for hard rocks with an ability to fracture into sharp edges - such as chert, quartz, obsidian, etc.). Not only is the composition of the two flints different but what occurs to produce a spark is also different. With artificial flint, the spark is created within the Ferrocerium when struck by a harder substance (steel,

rock, glass, etc.). In true flint, the spark is created by the steel that is striking the flint.

True flint and steel (not Ferrocerium) requires that certain hardness be maintained within the striking steel for the hand strike process to work. If the steel is too soft, a couple of things happen 1) it grabs the flint instead of smoothly striking 2) the carbon levels of the steel are too low at the striking surface for a spark to be generated by a hand strike. In order for sparks to occur from soft steel with true flint, either a larger shaving has to be removed with a greater force, or the material has to be exposed to higher friction rates such as grinding wheels or constant friction such as cars dragging tail pipes down the road. This is typically not an option for those needing fire for survival purposes.

Now let's look at the physics behind the primitive striking steel. Nearly all striking steels are case hardened carbon steel. When steel has been hardened properly the carbon levels at the surface, or case, are much higher than the carbon levels of un-heat treated steel. Thus, a simple hand strike against a sharp edge of a hard stone shaves a micro-grained amount of steel and turns it into a molten piece of metal - a spark.

The fire making process requires several components to produce a flame: steel that will produce a spark when struck against flint, material to catch the spark, and dry tinder that can be blown into a flame from the coal. Charred cotton cloth, charred punk wood (soft spongy material from dead vegetation and trees), and 0000 steel wool make the best spark catchers while cedar bark, crushed pine straw, dry grasses, bird nests, and many other similar materials make good tinder bundles.

Char is made by burning cotton or other vegetable material while robbing it of oxygen. A good process for this is to "bake" the material in an enclosed container over fire. The container should have a small hole punched in the lid. As the material heats up smoke will escape from this hole. Once the smoke stops, the material should be charred and ready for use. This type of charring, although the best way, is not the only way. Small pieces of cotton and punk wood can also be charred by catching them on fire and snuffing out the flame.

A brief explanation of the fire building process is to hold the flint rock in one hand with a sharp edge

extending outward. Angle the edge up about 30 degrees and hold the charred material or steel wool on top of this edge with your thumb. Using the other hand strike straight down with your steel in a smooth even stroke scraping the sharp exposed edge of the flint as you travel downward. When done properly this will throw a spark upwards into the charred material. Once the spark catches, gentle blowing will expand the size of the coal which is then placed inside the tinder bundle and blown gently to produce a flame. Experimentation with the striking procedure will teach you the best angle and methods to produce the best sparks. A critical factor in doing this is to keep the edge of your flint reasonably sharp and experiment with the striking angle. As the flint wears dull, break it to expose more sharp edges.



When learning this method of fire starting it's best to break it down into three separate steps. 1) Practice smoothly striking the flint with your steel until you produce sufficient sparks on every strike 2) Practice catching sparks in char or steel wool and blowing those sparks into larger coals. During this step you should also experiment with charring methods and different materials to see what works best. Always take into account humidity and the difficulties it can pose. 3) Practice blowing a coal to a flame within a tinder bundle. Again, try different tinders and various refinements of the tinder. You can also use a lit cigarette as your coal for this practice.



As a final note on techniques, when starting fire with true flint and steel the sparks produced are of considerably lower temperature than those produced by artificial flint (Ferrocerium). Due to this, charred material or fine steel wool is the only thing that will catch and hold the spark. The only exception to this is a true tinder fungus found on Birch trees in the Northern United States. Proper material preparation (such as charring) is important for this to be a successful method. With that said, most survival instructors refuse to teach this method since it requires char and good steel. I feel it is a sound survival technique

since it gives the survivalist a method of making fire on a continual basis after an initial fire has been made. For example if you were lost and attempting self-rescue by moving, you may find yourself needing to build more than one fire on your trek out. Carrying fire or using friction every time may not be an option. Simply charring punk wood or pieces of your clothing from the first fire will give you an easy method of starting additional fires when needed.

Throughout my adventures in the wilderness survival world, I've taught true flint and steel to numerous students. For the newcomer it's almost a magical way of starting fire and it leaves a solid knowledge

base from which the student will explore, experiment, and learn on their own, thus leading to confidence and increased survival potential should a situation ever occur. Even if you never use the process, it is wise to invest in a small C-Steel or other piece of striking steel for inclusion in your mini survival kit. It might just save the day.